REMARKS

The Examiner, Mr. Chang, is thanked for the courtesy extended applicants' attorney during the interview of January 11, 2005 during which differences between the claimed invention and the cited art were discussed. Applicants note that no agreement was reached concerning allowability of the claimed subject matter at the interview and in view of the interview, submitted herewith is an amendment of the independent claims in order to more clearly set forth the features of the present invention.

By the present amendment, the specification has been amended to update the status of the parent application as well as to correct informalities throughout.

Further, by the present amendment, each of independent claims 1, 6, 9, 14, 17 and 22 have been amended to more particularly set forth the feature of the liquid circulator. That is, in addition to the features of the liquid circulator as previously set forth in such claims, the claims now recite a liquid circulator configured to produce a minimized liquid circulating flow rate which is a flow rate sufficient to substantially prevent overheating of the heat generating member and providing the other previously set forth features. That is, in accordance with the present invention, the minimized flow rate provided is the flow rate which is sufficient to provide the desired cooling effect. As described at page 2, lines 11 - 15 of the specification of this application, in prior art arrangements, the cooling medium liquid is circulated at a typical liquid-moving rate and operating pressure, which are larger than required, thereby effecting excessive cooling. Therefore, the pump of the circulator is large in size and it has been difficult to form a portable electronic apparatus having a thin design. The present invention is directed to providing a liquid circulator which is configured so as to provide a minimized circulating flow rate which is sufficient for an

increased amount of heat occurring in a heat-generating element and thereby is sufficient to prevent overheating of the heat-generating element as described in the specification of this application. Further, applicants have determined as described in connection with Fig. 4 and page 13 of the specification, a sufficient cooling flow rate becomes not more than 1200 μL/sec and even when the cooling medium liquid is circulated at a flow rate larger than this value, the cooling performance thereof is kept almost saturated. That is, circulating of the cooling medium liquid at a flow rate that is larger than such value merely requires the pump to have an excessive large capability with an increase size and increase consumption of electricity without obtaining any benefit therefor. Thus, a principle feature of the present invention is to configure the liquid circulator so as to provide a minimum flow rate which is the flow rate sufficient to prevent overheating of the heat-generating element, which feature is contrary to the features previously adopted in the prior art and applicants submit that the claims, as amended, patentably distinguish over the cited art as will become clear from the following discussion.

As to the rejection of claims 1 - 8 and 17 - 24 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 - 2 and 16 of US Patent No. 6,611,425B2, which is the parent application of this continuing application, as recognized by the Examiner, such rejection can be overcome by the submission of a Terminal Disclaimer. Without acquiescing in the propriety of the rejection as set forth, submitted herewith is a Terminal Disclaimer in an attempt to expedite prosecution of this application together with the appropriate fee therefor, such that applicants submit that this rejection should now be overcome.

As to the rejection of claims 1, 4 - 6, 17 and 20 - 22 under 35 USC 103(a) as being unpatentable over Ohashi et al (US 5,764,483) and the rejection of claims

2 - 3, 7 - 16, 18 - 19 and 23 - 24 under 35 USC 103(a) as being unpatentable over Ohashi et al, such rejections are traversed insofar as they are applicable to the present claims and reconsideration and withdrawal of the rejections are respectfully requested.

As to the requirements to support a rejection under 35 USC 103, reference is made to the decision of In re Fine, 5 USPQ 2d 1596 (Fed. Cir. 1988), wherein the court pointed out that the PTO has the burden under '103 to establish a prima facie case of obviousness and can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. As noted by the court, whether a particular combination might be "obvious to try" is not a legitimate test of patentability and obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. As further noted by the court, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

Furthermore, such requirements have been clarified in the recent decision of In re Lee, 61 USPQ 2d 1430 (Fed. Cir. 2002) wherein the court in reversing an obviousness rejection indicated that deficiencies of the cited references cannot be remedied with conclusions about what is "basic knowledge" or "common knowledge". The court pointed out:

> The Examiner's conclusory statements that "the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper programming software" and that "another motivation would be that the automatic demonstration mode is user

> friendly and it functions as a tutorial" do not adequately address the issue of motivation to combine. This factual question of motivation is immaterial to patentability, and could not be resolved on subjected belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher."... Thus, the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion. (emphasis added)

Turning to the patent to Ohashi et al, applicants note that the patent and the present application are commonly assigned and Ohashi is a common inventor of the patent and this application. In setting forth the rejection, the Examiner at page 4 of the office action states:

> Ohashi fails to teaches said liquid circulator produces a liquid circulating flow rate so that a difference between a maximum temperature and a minimum temperature of said circulating liquid at least in said first and second flow passages is not greater than a difference between an upper limit temperature of said heat generating member and an outside air temperature of the electronic apparatus. (emphasis added).

The Examiner, however, contends that under a normal operating condition, the liquid cooling system claim is used to remove heat from the heat generating member inside the electronic apparatus to the outside air of the electronic apparatus and by Law of Physics, the temperature of the heat generating member is equal or higher than the temperature of the circulating liquid of the cooling system which is equal or higher than the outside air temperature. The Examiner concludes:

> Therefore, it would have been obvious to one having ordinary skill in the art that the difference between a maximum temperature and a minimum temperature of the circulating liquid at least in said first and second flow passages is not greater than a difference between an upper limit temperature of said heat generating member and an outside air temperature of the electronic apparatus. (emphasis added)

Applicants submit that the Examiner's position that the temperature of the heat generating member is equal to or higher than the temperature of the circulating liquid of the cooling system which is equal or higher than the outside air temperature is not necessarily correct for all conditions, and the Examiner's conclusion concerning obviousness represents a hindsight reconstruction attempt of the present invention utilizing the principle of "obvious to try" which is not the standard of 35 US 103. See In re Fine, supra. Applicants note that if the Examiner contends that these features are so obvious, it is apparent that Ohashi, the common inventor, would have suggested inclusion of such features in the disclosure of US Patent No. 5,764,483, which is clearly not the case. Applicants submit that the issue is not whether the Examiner can reconstruct a system in which operates in the manner as defined, but whether the disclosure of the prior art renders these claimed features obvious. There is no disclosure or teaching in Ohashi et al of the claimed features of the independent and dependent claims, as recognized by the Examiner. Furthermore, applicants submit that there is no suggestion in Ohashi et al that the liquid circulator be configured to provide a minimized circulating flow rate which is a flow rate sufficient to substantially prevent overheating of the heat generating member as well as the other features as claimed. That is, with this configuration, the size of the liquid circulator is reduced and sufficient cooling is effected, with it being recognized, as described in the specification of this application, an increase in pump capability and higher liquid circulating flow rates do not achieve improved cooling effects in the claimed arrangement, as apparently considered in the prior art. Thus, applicants submit that the features as now recited in each of the independent and dependent claims of this application, patentably distinguish over Ohashi et al in the sense of 35 USC 103 and all claims should be considered allowable thereover.

With regard to the Examiner's further contention that the circulating flow rate limits ranging from 120 μL/sec to 1200 μL/sec and at at least 10% of the sum of a temperature different between the semiconductor element and the heat receiving element and a temperature difference between the heat-dissipating element and an outside air temperature of the electronic apparatus is obtained, could be obtained by selecting an appropriate structure is again a recognition that Ohashi et al provides no disclosure or teaching of such features while again utilizing the principle of "obvious to try" is not proper. Moreover, the Examiner is utilizing what the present applicant has taught against the teacher which basis for rejection is improper. See, in re Lee, supra. Thus, applicants submit that the claims which further recite these features considered obvious by the Examiner also patentably distinguish over the cited art in the sense of 35 USC 103 and should be considered allowable thereover.

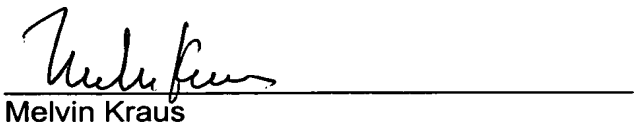
In view of the above amendments and remarks, applicants submit that all claims present in this application patentably distinguish over the cited art and should now be in condition for allowance. Accordingly, issuance of an action of a favorable nature is courteously solicited.

To the extent necessary, applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to the deposit account of Antonelli,

Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (Case: 500.40473CX1), and please credit any excess fees to such deposit account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP



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